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EXAMINER
KAPLAN, HAL IRA

ART UNIT	PAPER NUMBER
2836	

DATE MAILED: 07/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/668,010	SINHA ET AL.	
	Examiner	Art Unit	
	Hal I. Kaplan	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings were received on May 22, 2006. These drawings are accepted.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 2, 12, 13, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the US patent of Seymour et al. (4,505,150) in view of the US patent of Hubelbank et al. (4,920,489).

As to claims 1, 12, and 20, Seymour, drawn to sensing surges in gas turbine engines, discloses, in Figure 1, a temperature sensor, comprising: a device (2) adapted to provide a first signal having a parameter responsive to temperature (see column 1, lines 58-60); and a generator adapted to provide a reference signal (V_{REF}) having a parameter that is substantially consistent over a preselected temperature range (see column 1, line 68 through column 2, line 2); a comparator (10) electrically coupled to the device (2) and the generator (V_{REF}) and adapted to provide a second signal in response to the parameter of the first signal differing from the parameter of the reference signal (see column 2, lines 22-37 and 46-49); and a digital filter (12,14,16,18) coupled to the comparator (10) and adapted to provide a third signal in response to receiving the second signal for a preselected duration of time (4 ms) (see column 2, lines 49-67). Seymour does not disclose the temperature sensor being in thermal communication with a semiconductor memory and controlling refreshing in the memory.

Hubelbank, drawn to an apparatus and method for solid state storage of episodic signals, discloses a temperature sensor (40) in thermal communication with at least a portion of a semiconductor memory unit and controlling refreshing in the semiconductor memory unit (see column 4, lines 65-66 and column 5, lines 6-15 and 27-29). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use the temperature sensor of Seymour to refresh a semiconductor memory unit over the

preselected temperature range, as disclosed by Hubelbank, because DRAM devices must be periodically refreshed, and power consumption would be reduced.

As to claims 2 and 13, in the temperature sensor of Seymour, the comparator (10) is further adapted to deliver the second signal in response to the parameter of the first signal rising above the parameter of the reference signal (V_{REF}), and to discontinue delivery of the second signal in response to the parameter of the first signal falling below the parameter of the reference signal (V_{REF}) by a preselected magnitude (see column 2, lines 30-37).

6. Claims 3 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seymour in view of Hubelbank, and further in view of the US patent of Kleijne et al. (4,811,288).

As to claims 3 and 14, Seymour in view of Hubelbank teach all of the claimed features, as set forth above, except for the comparator being further adapted to deliver the second signal in response to the parameter of the first signal falling below the parameter of the reference signal, and to discontinue delivery of the second signal in response to the parameter of the first signal rising above the parameter of the reference signal by a preselected magnitude. Kleijne, drawn to a data security device for protecting stored data, teaches, in Figure 10, a temperature sensor comprising a device (132), adapted to provide a first signal having a parameter responsive to temperature; a generator adapted to provide a reference signal, and a comparator (130) electrically coupled to the device and the generator and adapted to provide a second signal in response to the parameter of the first signal differing from the parameter of the

reference signal; wherein the comparator (130) is further adapted to deliver the second signal in response to the parameter of the first signal falling below the parameter of the reference signal, and to discontinue delivery of the second signal in response to the parameter of the first signal rising above the parameter of the reference signal by a preselected magnitude (see column 8, line 64 through column 9, line 8, and column 10, lines 19-23 and 29-45). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to build the circuit of Seymour in view of Hubelbank so that the differential amplifier switches into positive saturation when the pyrometer output signal falls below the reference signal (reverse the inputs of the differential amplifier), as taught by Kleijne, instead of when the pyrometer output signal rises above the reference signal, because these two methods are analogous.

7. Claims 4 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seymour in view of Hubelbank, and further in view of the US patent of Matranga et al. (6,489,831).

As to claims 4 and 15, Seymour in view of Hubelbank teach all of the claimed features, as set forth above, except for the comparator including a hysteresis effect. Matranga, drawn to a CMOS temperature sensor, teaches, in Figure 3, a temperature sensor for sensing the temperature of a semiconductor device, wherein the comparator (4) includes a hysteresis effect (see column 4, lines 36-41). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to build the circuit of Seymour in view of Hubelbank using a comparator with a hysteresis effect, as taught by

Matranga, in order to prevent oscillations in the comparator output and eliminate the effect of noise on the sensor.

8. Claims 5, 6, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seymour in view of Hubelbank, and further in view of the US patent of MacKenzie et al. (5,940,256).

As to claims 5 and 16, Seymour in view of Hubelbank teach all of the claimed] features, as set forth above, except for the digital filter being adapted to provide the third signal in response to receiving a plurality of second signals over a preselected duration of time. MacKenzie, drawn to a circuit breaker responsive to repeated in-rush currents produced by a sputtering arc fault, teaches, in Figure 2, a digital filter adapted to provide an output signal in response to receiving a plurality of input signals over a preselected duration of time (see column 5, lines 44-48 and column 7, lines 31-32). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to build the circuit of Seymour in view of Hubelbank with a digital filter that provides the third signal in response to receiving a plurality of second signals over a preselected duration of time, as taught by MacKenzie, in order to increase the accuracy of the circuit by preventing the AND gate from switching if the pyrometer output signal rises above the reference voltage for a preselected duration of time due to a fault such as a voltage reference which is set too low.

As to claims 6 and 17, the filter of MacKenzie provides an output signal in response to receiving a plurality of input signals over a preselected duration of time without interruption (see column 5, lines 44-48 and column 7, lines 31-32). The

limitation "without interruption" lacks antecedent basis in the specification. As a plurality of second signals by definition has an interruption between them, the examiner has assumed that the limitation "without interruption" means within the preselected duration of time set by the limitations of the circuitry.

9. Claims 7 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seymour in view of Hubelbank, and further in view of the US patent of Takahashi (5,796,290).

As to claim 7, Seymour in view of Hubelbank teach all of the claimed features, as set forth above, except for the sensor being at least partially formed within a common substrate with the device. Takahashi, drawn to a temperature detection method and circuit using MOSFET, teaches, in Figure 5, a temperature sensor (21,22,23) formed within a common substrate with a device (22) adapted to provide a signal having a parameter responsive to temperature (see column 5, lines 47-54). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to build the device and the rest of the temperature sensor of Seymour in view of Hubelbank on the same substrate, as taught by Takahashi, in order to reduce the size of the temperature sensor.

As to claim 18, in the temperature sensor of Takahashi, generating the first signal having a parameter responsive to temperature further comprises generating the first signal having a parameter responsive to a temperature associated with a semiconductor device (21) (see column 7, lines 46-50).

10. Claims 8, 9, 11, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seymour in view of Hubelbank, and further in view of the US patent of Kojima (6,087,821) and the US patent application of Jin (2003/0042014).

As to claims 8, 11, and 19, Seymour in view of Hubelbank teach all of the claimed features, as set forth above, except for the generator providing a first and second reference signal, and the comparator providing a fourth, fifth, or sixth signal depending on whether the parameter of the first signal is less than the parameter of the first reference signal, between the first and second reference signals, or greater than the second reference signal. Kojima, drawn to a reference-voltage generating circuit, teaches, in Figure 2, a generator adapted to provide a first (Vref1) and second (Vref2) reference signal (see column 4, lines 7-10 and 14-17; column 6, lines 28-30; column 8, lines 18-32; and column 11, lines 36-40 and 44-48). Kojima does not teach a comparator providing a fourth, fifth, or sixth signal. Jin, drawn to a heat pump system, teaches, in Figure 2, a comparator (125,126,127,128) electrically coupled to a temperature sensing device (123,124) and adapted to provide a fourth signal in response to the parameter of the first signal being less than the parameter of the first reference signal, a fifth signal in response to the parameter of the first signal being greater than the first reference signal and less than the second reference signal, and a sixth signal in response to the parameter of the first signal being greater than the second reference signal (see paragraph 23, lines 4-5, 8-23, and 26-29; paragraph 29, lines 19-27 and paragraph 30, lines 1-9). The filter of Seymour would then output a seventh signal an eighth signal, or a ninth signal in response to receiving the fourth,

fifth, or sixth signal, respectively, for a preselected duration of time. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to build the circuit of Seymour in view of Hubelbank with two reference signals, as taught by Kojima, and a comparator providing a different signal depending on whether the parameter of the first signal is less than the parameter of the first reference signal, between the parameters of the first and second reference signals, or greater than the parameter of the second reference signal, as taught by Jin, in order to protect the semiconductor device from temperatures that are both too hot and too cold.

As to claim 9, the comparator of Jin comprises first (125) and second (126) comparators (see column 3, lines 8-9).

11. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seymour in view of Hubelbank, Kojima, and Jin, and further in view of the US patent of Kehler et al. (6,825,736).

As to claim 10, Seymour in view of Hubelbank, Kojima, and Jin teach all of the claimed features, as set forth above, except for a multiplexer. Kehler, drawn to a method and apparatus for controlling a voltage controlled oscillator, teaches, in Figure 1, a multiplexer (118) and a comparator (120), wherein the multiplexer (118) is configured to selectively couple first (Vmid) and second (Vlo) reference signals to the comparator (120) (see column 2, line 64 through column 3, line 12). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to build the circuit of Seymour in view of Hubelbank, Kojima, and Jin using a multiplexer and a

comparator, as taught by Kehler, instead of a separate comparator for each reference signal, in order to reduce the number of parts.

12. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Seymour in view of Hubelbank, and further in view of the US patent of Olarig et al. (6,564,288).

As to claim 21, Seymour in view of Hubelbank teach all of the claimed features, as set forth above, except for a memory, a microprocessor adapted to controllably access the memory, and a temperature sensor comprising a device adapted to provide a first signal having a parameter responsive to a temperature of said memory. Olarig, drawn to a memory controller with temperature sensors, teaches, in Figure 7, a system comprising a memory (125) (see column 5, lines 57-58); a microprocessor (130) adapted to controllably access the memory (125) (see column 5, line 57); and a temperature sensor (115) comprising a device adapted to provide a first signal having a parameter responsive to a temperature of the memory (125) (see column 8, lines 5-13). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to use the circuit of Seymour in view of Hubelbank to sense the temperature of a memory in a computer system, as taught by Olarig, because it is small, easy to build, and highly accurate.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The US patent to Atkinson (6,134,167) discloses a similar temperature sensor.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hal I. Kaplan whose telephone number is 571-272-8587. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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